Reg. No.															

Question Paper Code	13704

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

First Semester

Computer Science and Business Systems

24BSPH102 - PHYSICS FOR COMPUTING SCIENCE

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Central spot in the Newton's ring would be (a) Dark (b) Bright (c) Depends upon the refractive index of the lens (d) Depends upon the thickness of the lens	1	K1	CO1
2.	When light passes over a small aperture (comparable to wavelength) light bends. This occurrence is known as (a) Interference (b) Diffraction (c) Polarization (d) Refraction	1	K1	CO1
3.	What is the heart for the first law of thermodynamics? (a) Conservation of energy (b) Conservation of mass (c) Conservation of momentum (d) Conservation of work	1	K1	CO2
4.	The following variables denote the state of a thermodynamic system: (a) Pressure, Volume, and Temperature (b) Volume only (c) Pressure only (d) Number of moles	1	K2	CO2
5.	A motion which repeats itself in equal interval of time is termed as _____ (a) Periodic motion (b) Circular motion (c) Rotational motion (d) Translational motion	1	K1	CO3
6.	In the case of forced oscillations, which of the following statements is not true? (a) Frequency equals that of external periodic force (b) Amplitude depends upon the damping coefficient (c) Amplitude tends to infinity at resonance (d) None of these	1	K2	CO3
7.	A crystal is described by (a) A simple lattice of points and a basis of atoms (b) A simple lattice of atoms and a basis of points (c) A Bravais lattice of points and a basis of atoms (d) Only a basis of atoms	1	K1	CO4
8.	The number of lattice points inside bcc and fcc lattice are : (a) 2 and 4 (b) 6 and 8 (c) 4 and 2 (d) 3 and 3	1	K1	CO4
9.	Which process is responsible for amplification of the light in LASER? (a) Blackbody radiation (b) Einstein oscillation (c) Planck's radiation (d) Stimulated emission	1	K1	CO5
10.	In an electromagnetic wave propagating in an isotropic homogeneous medium, electric and magnetic field vectors are (a) Parallel to each other (b) Perpendicular to each other and also perpendicular to direction of propagation (c) Perpendicular to each other and parallel to direction of propagation (d) Perpendicular to each other	1	K2	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	What are the conditions for the formation of interference fringes?	*2*	*K1*	*CO1*
12.	Define double refraction.	*2*	*K1*	*CO1*
13.	List out the intensive and extensive variables.	*2*	*K1*	*CO2*
14.	What is an adiabatic process?	*2*	*K1*	*CO2*
15.	Classify the types of oscillatory motion.	*2*	*K2*	*CO3*
16.	State Q- factor of the oscillator.	*2*	*K1*	*CO3*
17.	Define crystal structure.	*2*	*K2*	*CO4*
18.	Sketch (111) plane for a cubic crystal.	*2*	*K2*	*CO4*
19.	How will you classify optical fiber?	*2*	*K1*	*CO5*
20.	Calculate the wavelength of emission from GaAs semiconductor laser whose band gapenergy is 1.44 eV.	*2*	*K2*	*CO5*
21.	Mention the characteristics of electromagnetic waves.	*2*	*K1*	*CO6*
22.	What are electromagnetic forces?	*2*	*K1*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Give the theory of plane diffraction grating. Elucidate how it is used to find the wavelength of light.	*11*	*K2*	*CO1*
		OR			
	b)	Describe the theory, production and detection of elliptically and circularly polarized light.	*11*	*K2*	*CO1*
24.	a)	State and explain the first and second law of thermodynamics.	*11*	*K2*	*CO2*
		OR			
	b)	Describe the change of entropy in reversible and irreversible process.	*11*	*K2*	*CO2*
25.	a)	Define simple harmonic motion. Derive the equation for simple harmonic motion.	*11*	*K2*	*CO3*
		OR			
	b)	Give the theory of damped oscillations and discuss the case of under damping.	*11*	*K2*	*CO3*
26.	a)	Determine the packing fraction of FCC and HCP.	*11*	*K2*	*CO4*
		OR			
	b)	Classify the various types of crystal defects with neat diagram.	*11*	*K2*	*CO4*
27.	a)	Describe the construction and working of CO_2 laser.	*11*	*K2*	*CO5*
		OR			
	b)	Elucidate the propagation of light through optical fiber and mention its applications.	*11*	*K2*	*CO5*
28.	a)	Derive Maxwell's equations in differential and integral form.	*11*	*K3*	*CO6*
		OR			
	b)	State and prove Poynting's theorem.	*11*	*K3*	*CO6*